

## EXHIBIT 4

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## Advanced Internet and Intranet Web Publishing, Content Management and Electronic Commerce Solutions.

Adhesive Software is a software development and Internet services company. Adhesive specializes in serving the online publishing needs of internet and intranet web developers, ISPs, web site hosting services and professional multimedia developers through its robust suite of interactive publishing tools and consulting services.

## Dynamic Web Site Management Tools



WebOS™ is a mature suite of web site management tools that enable webmasters and developers to produce fully interactive Web sites in a logical and controllable fashion. Through its powerful Web Object-Management Facility, WebOS™ can transform a static Web site into living information. Ideal applications include online database integration, online shopping systems, user discussion forums, live chat rooms, user profile tracking, dynamic page updates, and scheduled advertising.

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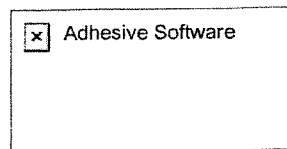
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## WORLD-WIDE WEB PUBLISHING SOFTWARE SOLUTIONS FOR INTERNET AND INTRANET WEB DEVELOPERS, ISPS, AND HOSTING SERVICES

AUSTIN, TX -- Adhesive Media, Inc. serves the on-line publishing needs of internet and intranet web developers, ISPs, web site hosting services and professional multimedia developers through its robust suite of interactive publishing tools and consulting services.

### Essential Points For Review Include:

Systems being adapted for use on the Internet and World Wide Web are too expensive for many companies, particularly in terms of initial systems integration and continuing labor costs.

Businesses now publishing on-line use a collection of generic publishing systems that are unwieldy to operate, making integration and ongoing management of information and customer tracking difficult and slow at best. This renders effective application of online electronic commerce almost impossible.

Despite the amazing expansion of the Internet (more than 30 million users), the recent endorsements it has received from such mass communications leaders as AT&T will result in even more rapid growth. This dramatically increases the importance of dynamic on-line content for businesses.

Adhesive Software has developed the industry's only suite of turnkey software and services that provide on-line multimedia publishing and corporate network integration with true dynamic audience interaction, effective online credit card processing, and corporate systems integration.

Adhesive Software's systems, software, and consulting service solutions are a direct response to a growing list of clients whose previous efforts to publish on the Internet and other digital platforms cost too much money, consumed too much time, and required too much labor. Adhesive Media's solutions overcome all of these barriers.

### Adhesive Media's Primary Suite of Publishing and Management Tools

#### **The Dynamic Internet & Intranet Web Publishing & Content Management Solution (WebOS™)**

Adhesive Software's **WebOS™** is a multimedia publishing and content management solution that requires no special training of the user. **WebOS™** contains powerful Object-Management Facilities, sophisticated, easy to configure, database applications, and dynamic HTML publishing tools. Because **WebOS™** is a server tool it does not require a special client application. Its functionality is accessible

from within any advanced web browser. With the optional electronic commerce module, **WebOS™** becomes a complete solution for automatic online credit card processing, subscription renewal, and accounting system integration.

Adhesive Software has more than 150 corporate customers. Many of these customers are successfully using **WebOS™**.

### **The Internet Service Provider Management System (ISPMAN™)**

**ISPMAN™** is a comprehensive suite of applications that allow ISPs and Hosting Services to effectively manage all aspects of on-line business. With **ISPMAN™** new customers can sign up for instant access to a range of subscription services via credit-card and/or automatic check drafting. **ISPMAN™** will allow the import of these transaction records into an accounting system, creating a paperless office. **ISPMAN™** manages the details of operating an Internet service business by managing account access, notifying users of expiring accounts and automatically renewing accounts via credit-card. **ISPMAN™** diagnoses online connections for troubleshooting, and controls domain name management and registration.

**WebOS™** and **ISPMAN™** combine to provide a uniquely powerful solution for the effective design, development, and maintenance of multiple points of presence (POPs). Using this software, an ISP or Hosting Service can provide more flexible and cost-effective services than its competitors in multiple locations.

### **Adhesive Software's Professional Consulting Services**

Adhesive Software offers a range of consulting services built from real world experience. Value-added services are necessary to stay alive in the growing internet marketplace. Adhesive Software's experience in developing these services and solutions is valuable to anyone entering this new market. If you are considering adding services and/or multimedia delivery to a current web site or are going on line for the first time, Adhesive Software can make the journey simple, effective, and painless.

Adhesive Software's software and consulting services evolved directly from more than two and a half years experience solving corporate networking and content delivery problems. The multimedia publishing, content management, and electronic commerce capabilities of **WebOS™** and **ISPMAN™** were developed as direct solutions to real-world needs.

**WebOS™** and **ISPMAN™** are trademarks of Adhesive Software, Inc.

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## Dynamic Web Site Management Tools

For a full description and explanation of how our software tools and the entire WebOS™ Package works, read the [WebOS™ and Software Tools Background](#). For a visual explanation, view this [Diagram](#).

For complete WebOS™ pricing information, click [here](#).

To find out how this page takes advantage of WebOS™, click [here](#).

Adhesive Software's products are the result of more than three years experience building fully interactive web sites. This experience is built into every one of our products, and the result is a robust, fine-tuned set of solutions.

To see our products in action take a look at our [site portfolio](#).

Our [Demos](#) section will give you a hands-on experience of WebOS™.

[Adhesive Software](#) has developed the industry's only suite of turnkey software and services that provide on-line multimedia publishing and corporate network integration with true dynamic audience interaction, effective online credit card processing, and corporate systems integration.

Adhesive Software's systems,

## WebOS Product Line

[WebOS?, full version, all add-on packages](#) - The Dynamic Internet & Intranet Web Publishing, Content Management and Electronic Commerce Solution

- [WebOS?, no add-on packages](#) - The Dynamic Internet & Intranet Web Publishing, Content Management and Electronic Commerce Solution
- [WwOMF™](#) - Powerful Web Object Management Facility
- [WwBASE? \(full version\)](#) - Versatile Web Database Tools
- [WwBASE? LE \(one database\)](#) - Versatile Web Database Tools
- [WwSHOP™, full version \(one database\)](#) - Robust online transaction-processing system
- [WwSHOP? LE](#) - Robust online transaction-processing system
- [WwFORUMS™](#) - True multimedia forums to your Web site
- [WwCHAT™](#) - Server based chat solution
- [WwSURVEY™](#) - Intelligent web survey tool
- [WwSEQUENCER™](#) - Easy online presentation developer/server
- [WwNEW™](#) - Automated "What's New" section generator
- [WwARTICLES™](#) - Write pages "live" without knowing HTML
- [WwTRACKER™](#) - Real Time statistics and user tracking system

[ISPMAN](#) - The Internet Service Provider Management System

software, and consulting service solutions are a direct response to a growing list of clients whose previous efforts to publish on the Internet and other digital platforms cost too much money, consumed too much time, and required too much labor. Adhesive Media's solutions overcome all of these barriers.

Read the [Adhesive Software and Eden Matrix Online Service](#) Backgrounders for the full story.

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## THE DYNAMIC INTERNET & INTRANET WEB PUBLISHING, CONTENT MANAGEMENT & ELECTRONIC COMMERCE SOLUTION

View a [Diagram](#) explaining how WebOS™ works.

**WebOS™** - WebOS™ is a mature application that has been proven during more than two years of real-world operation. WebOS™ is unique software which provides a powerful and flexible development platform for all applications using the World Wide Web. This software enables the developer to produce fully interactive Web sites with all forms of media in a logical and controllable fashion.

**WebOS™** provides a Web Object-Management Facility that enables the developer to create dynamic data and logic objects that can be used and re-used throughout a Web site. This means that **WebOS™** delivers a comprehensive development platform for controlled-access and controlled-display applications using the World Wide Web.

**WebOS™** is a server tool and does not require a special client application. Its functionality is accessible from within any advanced Web browser.

**WebOS™** transforms a Web site into living information. Web site administrators can empower individual users to become active contributors to the content of a Web site without requiring the user to learn HTML coding or other complex computer functions. Ideal applications include online database integration, online shopping systems, user discussion forums, live "chat" rooms, user profile tracking, dynamic page updates, and schedules advertising.

**WebOS™** includes several core modules:

**WwOMF™** - This powerful Web Object-Management Facility provides a comprehensive management framework that allows webmasters to effortlessly create applications and data objects that can be quickly added to any Web page. Objects can include such things as Web pages, text files, graphics, multimedia files, audio, video, database queries, surveys, Java applets, custom C and Perl programs, command-line scripts, and just about anything else you can think of. These dynamic objects can then be easily added to any Web page on any server running **WebOS™**. Site administrators have unprecedented power to add interactive enhancements to their Web sites through a centralized management interface.

**WWBASE™** - This versatile application is a sophisticated set of tools for creating and maintaining interactive Web databases and custom point-of-sale solutions. Armed with these tools, Web designers and site administrators gain the ability to easily create interactive knowledge bases, dynamically scaling HTML page templates, forms-based management interfaces, complete shopping systems, and interactive user discussion forums. By using a predefined set of HTML templates, page layout and style is easily maintained across your site. As an object under **WwOMF™**, **WwBASE™** delivers even more power into the hands of the webmaster.

**WwPOST™** - This application provides configurable Web forms-processing solutions. It supports many user-input functions, including formatted E-mail messages and formatted file submissions. It provides streamlined capabilities for collecting survey data, E-mail purchase requests, live interactive chat handling and other forms-processing applications.

**WebOS™ includes several optional application modules:**

**WwSHOP™** - This robust online transaction-processing system provides an integrated solution for automatic credit card processing through standard banking interfaces that are readily available today. When used with **WwBASE™**, it gives webmasters, site designers, and even nontechnical marketing staff the ability to easily manage complete online shopping malls where products can be accumulated in a user shopping cart and then "checked out" and paid for within minutes using all major credit cards.

**WwForums™** - **WwForums™** brings true multimedia forums to your Web site. It is easily modified to meet specific needs. **WwForums™** contains automatic message threading, time and date stamping, and previous-message quoting. An advanced administrative interface enables the forum administrator to control forum content and access privileges. Because the **WebOS™** engine parses HTML, these forums can be more than text. Multimedia and other files can be pointed to within each message. We designed this module to be familiar to a seasoned USENET user or a neophyte to the Internet.

**WwChat™** - This module is a server-based Web-chat solution that works across all platforms. Separate chat sessions can be configured for different topics. Access and control is administered through a simple Web interface.

**WwSurvey™** - Surveys are a popular method for generating measurable information about site visitors. Developing surveys and parsing the gathered data can be very difficult. **WwSurvey™** is a tool which takes online surveys to another level. Data can be gathered and saved in a variety of ways depending on the need. The survey creator can easily choose which questions are required and which are optional without any CGI programming. **WwSurvey™** contains a powerful tool that determines which questions to serve to the survey taker. By serving small sets of questions that determine which set of questions to ask next, marketing professionals will be able to home in on specific target markets without asking unnecessary questions. These "tiered" surveys are able to generate information that standard linear surveys cannot.

**WwSequencer™** - This server add-on tool is a slide-show generator that will work with any browser. **WwSequencer™** can serve a series of developer-defined, "timed" screens containing a variety of media. If you desire to give online presentations based on information from an information base or are displaying online advertisements, or infomercials, **WwSequencer™** can handle the job.

**WwNew™** - By using this module you "What's New" sections come alive with little or no maintenance. New sections of your site will instantly be added with **WwNew™** without any modification of your pages. **WwNew™** saves time by automatically handling the job of telling site visitors about new site



additions without your intervention.

**WwArticles™** - This is a simple article-posting module that enables the administrator and/or visitors to contribute to the content of a site. **WwArticles™** will support "submitted articles," "quotes of the day," and "press release" sections with ease. Articles can be blend of text and other media because of the HTML-parsing power of **WebOS™**. With the timed release and editorial control functions user access can be controlled and articles can be viewed and edited before "going live." Articles can be given release and remove dates to limit the time certain data is available on a site. All of the submission and administration functions occur via an intuitive Web interface.

**WwTracker™** - **WwTracker™** is a real-time site-statistics and user-tracking system. When visitors enter and travel through a site that is running **WebOS™**, detailed information can be gathered about them and their visiting habits. Entry times and the exact path through documents can be recorded. This kind of detailed information is necessary for advertising and marketing professionals. Advertising banner rates can be set via these statistics. Popular sections can be beefed up to provide more of the same flavor of information and d"dead" sections can be cut off. User access and registrations can be administered through the **WwTracker™** interface for an entire Web site or portions of that site. Web sites can be made the best that they can be using this as a real-time audience-response meter.

#### **WebOS™ has a competitive edge because:**

There are no other competitive online publishing and management solutions currently available, while the **WebOS™** has been in use solving real-world Internet tasks for more than a year and a half.

**WebOS™** is designed for ultimate flexibility, using standard HTML templates files that can be created using any authoring/design software, including Adobe's PageMill or Microsoft's FrontPage. Likewise, any third-party or custom-developed CGI applications can be easily defined as objects for use under **WebOS™**.

**WebOS™** is a server-based solution, which means it is entirely cross-platform compatible (any computer, from PDAs to mainframes, that has a Web browser can use it) and can be used effectively by geographically dispersed customers (users around the world as well as companies with multiple divisions in different locations).

Because the core **WebOS™** engine can serve a wide variety of functions, it is an ideal platform for custom/targeted market solutions (both vertical and horizontal). Targeted solutions already in development or active use include:

1. Worldwide technical support management systems.
2. Worldwide contact/client management systems.
3. Shopping malls and Internet retail management systems.
4. Magazine and newspaper publishing workflow and site management systems (NewsFlash).

Specific Intranet and Internet information solutions are easily developed with the **WebOS™** engine. Because **WebOS™** contains a powerful object manager, applications easily talk to each other. These workgroup applications in development or currently in use are an ideal examples of the power of **WebOS™**:

1. Workgroup Calendars for Intranet and Internet usage. Companies, individuals and information publishers can share information and files globally, enhancing the growing virtual office.
2. In-house educational systems for training and testing. A Web interface allows the test developer to put the test together and enter the test key. The tests can be multidimensional, where text, graphics, and other multimedia resources can be used to educate and/or teach the student.
3. Human Resource Management Systems. Online information (manuals, insurance information, etc.) For internal use, and external information for people looking for jobs (job postings, company information, etc.). Information can be easily found by using an intuitive search tool.

**WebOS™** has a base price of \$4995. **WwOMF™**, **WwBASE™**, and **WwPOST™** can be purchased as separate, stand-alone software packages. **WwSHOP™**, **WwForums™**, **WwChat™**, **WwSurvey™**, **WwSequencer™**, **WwNew™**, **WwArticles™**, and **WwTracker™** can be purchased as stand-alone applications or modules for an installed system running **WebOS™**.

**WebOS™** can be purchased with or without any of the above modules.

**WebOS™**, **WwOMF™**, **WwBASE™**, **WwPOST™**, **WwSHOP™**, **WwForums™**, **WwChat™**, **WwSurvey™**, **WwSequencer™**, **WwNew™**, **WwArticles™**, and **WwTracker™** are trademarks of Adhesive Software, Inc.

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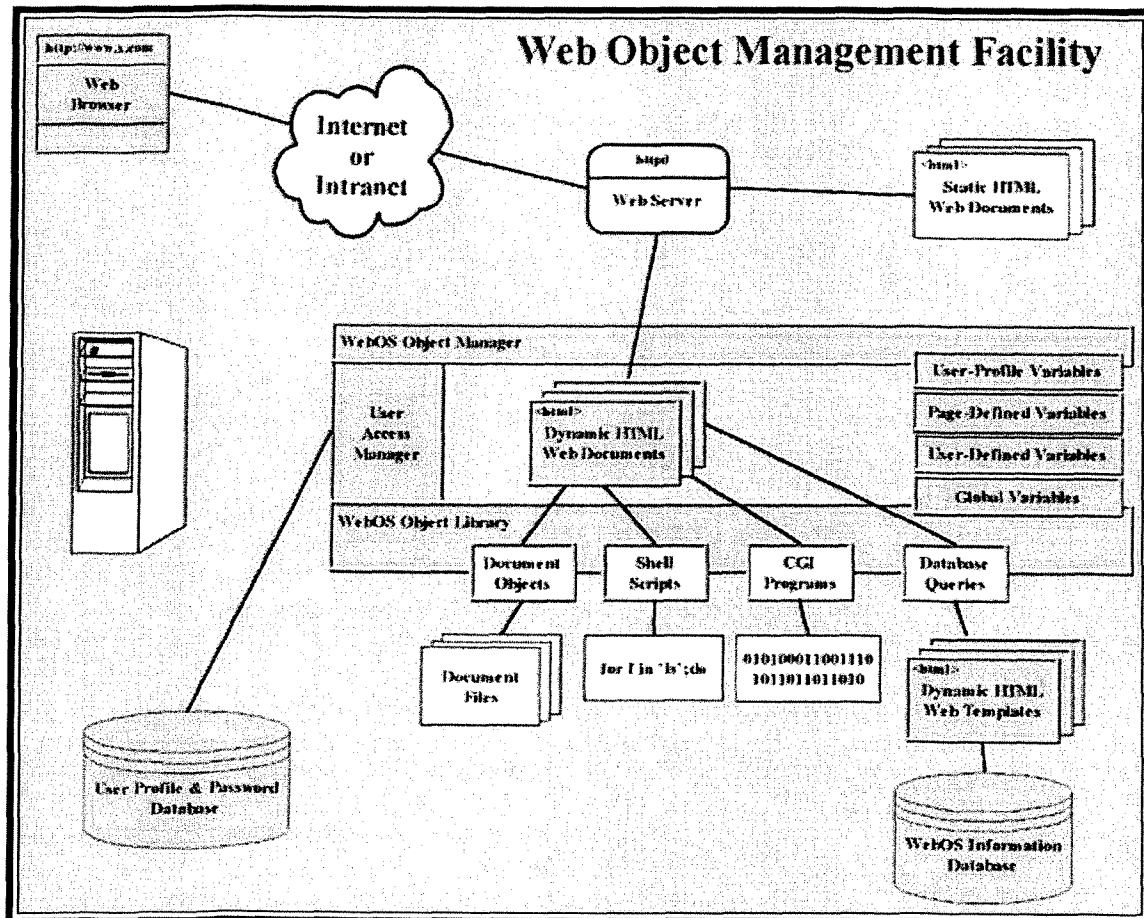
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## Dynamic Database Query Objects

Like all of the pages on this site, the source HTML document for this web page is parsed by the **WebOS™ Object Management Facility** before it gets sent to your web browser. What you are looking at right now is how the unparsed version of this page looks (with the exception of this text). The dynamic object referenced in the right-hand column,

#adhesive\_pwebos#

is a database query defined in the **WebOS™ Object Library**. The query searches a **WwBASE™** database for Adhesive Software's current clients and returns an HTML-formatted list of matching entries from the database. The resulting **Dynamic HTML Page** is then sent on to your web browser.

To see this page in action using WebOS™, click [here](#).

## Sites Using WebOS™

#adhesive\_pwebos#

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## WebOS™ Meets Diverse Range of Website Needs

Take a look at WebOS™ in action! Our portfolio showcases the wide variety of practical solutions that have been built using WebOS™ technology.

For a hands-on experience of WebOS™ take a look at our [Demos](#) section.

WebOS™ is being used to solve a wide variety of website development challenges, including advanced database integration, complete web site management, online shopping systems with automated credit card transaction processing, user discussion forums, and user-controlled information publishing.

WebOS™ was created in direct response to real-world web developer needs and its effectiveness has been proven during more than two years of production use.

To find out how this page takes advantage of WebOS™, click [here](#).

## Sites Using WebOS™

- [The Galveston Daily News](#)
- [Columbia Health Care - St. David's Hospital](#)
- [Abyss Books](#)
- [Texas MediNet](#)
- [Silicon Hills](#)
- [International Golf Outlet](#)
- [8 1/2 Souvenirs](#)
- [Search-USA](#)
- [M2K](#)
- [The Internet Properties Real Estate Database](#)
- [Independent Film](#)
- [Corwin's AuthorWeb](#)
- [The Entire Eden Matrix Online Service](#)
- [The Eden Matrix Sites Database](#)
- [The Eden Matrix Services Catalog](#)
- [The Music Matrix Bands Database](#)

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## WebOS Meets Diverse Range of Website Needs

For a full description and explanation of how our software tools and the entire WebOS™ Package works, read the [WebOS™ and Software Tools Backgrounders](#). For a visual explanation, view this [Diagram](#).

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To find out how this page takes advantage of WebOS, click [here](#).

To see our products in action take a look at our [site portfolio](#).

Our [Demos](#) section will give you a hands on experience of WebOS™.

Read the [Adhesive Software](#) and [The Eden Matrix Online Service](#) Backgrounders for the full story.

## WebOS Product Line

### WebOS?, full version, all add-on packages

\$4995 (sku: WW0015)

- WebOS?, no add-on packages  
\$2595 module (sku: WW0014)
- WwOMF™  
\$995 module (sku: WW0009)
- WwBASE? (full version)  
\$995 module (sku: WW0011)
- WwBASE? LE (one database)  
\$325 module (sku: WW0010)
- WwSHOP™, full version (one database)  
\$2195 module / \$2695 stand-alone (sku: WW0013)
- WwSHOP? LE  
\$1295 module / \$995 stand-alone (sku: WW0012)
- WwFORUMS™  
\$795 module / \$959 stand-alone (sku: WW0006)
- WwCHAT™  
\$695 module / \$869 stand-alone (sku: WW0005)
- WwSURVEY™  
\$895 module / \$995 stand-alone (sku: WW0007)
- WwSEQUENCER™  
\$495 module / \$619 stand-alone (sku: WW0002)
- WwNEW™  
\$595 module / \$749 stand-alone (sku: WW0004)
- WwARTICLES™  
\$395 module / \$495 stand-alone (sku: WW0001)
- WwTRACKER™  
\$895 module / \$995 stand-alone (sku: WW0008)

ISPMAN

\$ - Price Varies Per Installation (sku: WW0100)

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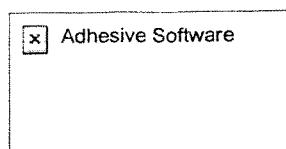
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To find out how this page takes advantage of WebOS, click [here](#).

Don't forget that our products are the result of over three years experience building interactive web sites. This experience is built into every one of our products, ensuring you a robust, fine tuned set of solutions.

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[Click Here](#) to view more products.

## WebOS?, full version, all add-on packages



WebOS? is a mature application that has been proven during more than two years of real-world operation. WebOS? is unique software which provides a powerful and flexible development platform for all applications using the World Wide Web. This software enables the developer to produce fully interactive Web sites with all forms of media in a logical and controllable fashion.

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## WwOMF™

This powerful Web Object-Management Facility provides a comprehensive management framework that allows webmasters to effortlessly create applications and data objects that can be quickly added to any Web page. Objects can include such things as shell scripts, Java applets, Web pages, database queries, text files, graphics, multimedia files, audio, video, surveys, custom C and Perl programs, and just about anything else you can think of. These dynamic objects can then be easily added to any Web page on any server running WebOS™. Objects can inherit properties from other objects, from the web pages that contain them, and from user input. WebOS™ gives site administrators unprecedented power to add interactive enhancements to their Web sites through a centralized management interface.

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## Dynamic Database Query Objects

Like all of the pages on this site, the source HTML document for this web page is parsed by the **WebOS™ Object Management Facility** before it gets sent to your web browser. What you are looking at right now is how the unparsed version of this page looks (with the exception of this text). The dynamic object referenced in the right-hand column,

```
#adhesive_allserv#
```

is a database query defined in the **WebOS™ Object Library**. The query searches a **WwBASE™** database for Adhesive Software's services and returns an HTML-formatted list of matching entries from the database. The resulting **Dynamic HTML Page** is then sent on to your web browser.

To see this page in action using WebOS™, click [here](#).

## Adhesive Software's Professional Consulting Services

```
#adhesive_allserv#
```

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### Adhesive Software's Advanced Development and Marketing Services

For an introduction to Marketing and Advertising on the Internet, [click here](#).

To find out how this page takes advantage of WebOS, [click here](#).

Adhesive Software offers a range of consulting services built from real world experience. Value-added services are necessary to stay alive in the growing internet marketplace. Adhesive Software's experience in developing these services and solutions is valuable to anyone entering this new market. If you are considering adding services and/or multimedia delivery to a current web site or are going on line for the first time, Adhesive Software can make the journey simple, effective, and painless.

Most of our services are offered through [The Eden Matrix Online Service](#). The Eden Matrix Online Service is a nationally recognized Internet Service Provider offering cutting edge services. Select the Eden Matrix link for more information about our services.

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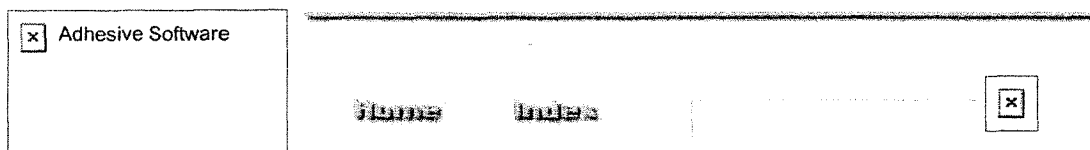
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## Dynamic Object Management Facility

WebOS? provides a Web Object-Management Facility that enables the developer to create dynamic data and logic objects that can be used and re-used throughout a Web site. This means that WebOS? delivers a comprehensive development platform for controlled-access and controlled-display applications using the World Wide Web. WwOMF can be specifically referenced in the path to individual pages and/or set as the default CGI for all files on your site.

## Shell Script Objects

Shell Scripting Objects give developers a fast and efficient way to implement advanced Web functions by providing access to non-CGI applications as well as file and system management functions of the underlying operating system. This means that your web applications can take full advantage of the powerful system utilities found in UNIX environments.

## Document Objects

Document Objects give developers a fast and efficient way to integrate text and HTML documents throughout a web site. Text Document Objects can be used to separate a page's content from it's HTML formatting. HTML Document Objects can be used to create standard page formatting elements that can be reused throughout a site, giving web site managers the ability to make global formatting changes by modifying a single file.

## CGI Program Objects

CGI Program Objects give developers an easy way to integrate existing CGI programs into a WebOS site. Any CGI program can be executed as an object so that its output (usually in HTML format) is inserted into the web page containing the object reference. This allows both custom and commercial CGI applications to be integrated into a WebOS site.

## User Access Manager

The User Access Manager gives developers the ability to restrict page and directory access to registered users and store user profile information for use throughout the site. The User Access Manager tracks users as they move through the site by adding the user's login name to the path information stored in the web server's standard log files.

## User-Profile Variables

WebOS internal functions and objects in the Object Library can inherit environment variables, properties, preferences, and settings for an individual user from the User Profile Database. These variables can be used to control such things as which pages a user can access and what options are enabled in WebOS Dynamic HTML Pages.

## Page-Defined Variables

WebOS internal functions and objects in the Object Library can inherit environment variables, properties, preferences, and settings from the pages that call them. These variables can be used most effectively to control WebOS Dynamic HTML Pages that contain varying information depending on how they are accessed. For example, a single Search Results Page can be used to display the results of multiple database queries.

## **User-Defined Variables**

WebOS internal functions and objects in the Object Library can inherit environment variables, properties, preferences, and settings from user input and option selections. These variables can be used in a wide variety of ways, such as defining user-selected portions of a database query, shell script, or other program, as well as overriding user profile settings and manipulating WebOS Dynamic HTML Pages.

## **Global Variables**

WebOS internal functions and objects in the Object Library can inherit environment variables, properties, preferences, and settings from global variables defined as objects in the Object Library. These variables can be used by any object defined in the Object Library, regardless of user selections, user preferences, or the page calling the object.

## **Using Dynamic Objects in WebOS**

There are two primary configuration files used by OMF:

- webman.config
- tags.config

The webman.config file controls which directories and/or files can be accessed under OMF, as well as whether or not those files/directories require a username and password before they can be accessed.

The tags.config file is the **OMF Object Library**, a central repository for all Logic Objects and File Objects available for use in your Web Site.

## **OMF Directory Configuration File**

All configuration to allow OMF to operate on files in a given directory is done in the webman.config file, found in the WebOS configuration file directory. Each entry consists of one line containing one or three values separated by tabs. The basic format of an entry in webman.config is:  
 directory path\_to\_password\_file path\_to\_login\_page

<b>Entry</b>	<b>Example</b>	<b>Description</b>
directory	info/sites	this is always a subdirectory of the root level of the webserver. When a directory is entered into the webman.config file, OMF may operate on any file in that directory or any of its subdirectories. If different subdirectories need different OMF schemes, they must be

`path_to_password_file /usr/web/htdocs/info/reg/passwd`

put into the file in order of depth, ie. info would have to come before info/sites and info/help

`path_to_login_page /usr/web/htdocs/sites/reg/login.html`

This entry is optional. It is the full UNIX path to the password file for OMF to place username/password restrictions on access to the directory.

Required if the password file is used. It is the full UNIX path to the login screen for the OMF protected directory. The login screen is an HTML form allowing the user to enter a username and password for the directory.

## **The OMF Object Library**

OMF tags are defined in the `tags.config` file, found in the WebOS configuration file directory. This file has one tag per line, consisting of three caret-separated items:

`object_name^object_action^object_type`

## **CGI Objects in WebOS**

Almost all of the objects you build will have the `object_type "cgi"` so that they will almost all take the form:

`object_name^object_action^cgi`

The `object_name` should be fairly self-explanatory. It has to match the object reference tag in the page you want it invoked by, and must be unique. That is to say your HTML file must contain

`#objectname#`

in order for a given object to be executed when users access that HTML page.

Thus, the focus of our discussion here must be on the intricate possibilities of the `object_action`.

The most common types of `object_actions` are those that invoke UNIX shell programs and CGIs. UNIX shell programs, like `date`, can be run directly and their output will be inserted into the web page in place of the the object reference tag.

For example, an object that looks like this:

`longdate^/usr/www/WebOS/utils/date +"%A, %B %d, %Y"^cgi`

will return something like this:

Wednesday, September 25, 1996

Unfortunately, many objects are much more complex than this since they access CGI programs to do database queries and other neat stuff, in which case the syntax and rules associated with that CGI program become very important.

Most CGI programs, when referenced as objects, cannot be called directly because they need certain environment variables that are normally set by the web server. As a result, CGIs are typically invoked using a UNIX structured called "env", which takes the following form:

env ENVIRONMENT VARIABLES /path/to/program/you/want/executed

For example, here's what the main GDN news object looks like:

```
todaynews^env REQUEST METHOD=GET QUERY STRING=K0=gdnews+HEAD=none
+LOOP=req_loop.html+SF=\\(category\\&story_date\\&!topstory\\)\\
|\\(category\\&story_date\\)+SV=news]`/usr/WWW/WebOS/utills/date
+ "%D" `]top]news]`/usr/WWW/WebOS/utills/ ndate -3` `/usr/WWW/WebOS
/utills/ndate -1`+SORT=!story_date|priority+SCORE=n
+ssiuname=WebOSTTN+ssipwd=TTN4083E185 /usr/WWW/bin/searchb^cgi
```

The first part of this object is very standard:

env REQUEST METHOD=GET QUERY STRING=

and doesn't need to change.

The third part of the object is fairly standard for WebOS database queries:

/usr/WWW/bin/searchb

and doesn't need to change.

It's the middle part that determines whether your database query will work or not -- i.e., everything that comes directly after QUERY STRING=These elements are name=value pairs that will typically include the following:

K0= The Database ID (gdnews)

HEAD= The header file (none)

LOOP= The loop file (req\_loop.html, for example)

SF= Field Names to Search and the Boolean relationships among these fields, as in:  
\\(category\\&story\_date\\&!topstory\\)\\|\\(category\\&story\_date\\)

SV= The values to search for in the fields defined by SF. These must be separated by ]brackets] and fall in the same order as the SF entries, as in:  
news]09/25/96]top]news]{09/22/96}{09/24/96}

The last value in this series is a special case -- it's a date range structure that finds values between two dates {date1}{date2}

The Boolean relationships between these SF and SV elements will be addressed later in this tutorial.

SORT= Fields to sort on, in order of importance. For example,  
\\!story\_date|priority



SCORE= Control flag for Boolean match accuracy ranking. This is only necessary if you don't want your search results ranked by how closely they matched your search query. For example,  
SCORE=n

ssiuname=#ssiuname# and ssipwd=#ssipwd# are user access tracking tags.

All name=value pairs are joined by the equal sign (=).

Multiple name=value pairs are separated by plus marks (+).

## **Sub-Programs Within Objects**

The Search Value (SV) settings in many of the WebOS database query objects use current date and date-range functions generated by variants of the UNIX date facility. These sub-programs are invoked to generate a portion of the QUERY\_STRING, typically within the SV. All sub-programs are invoked within 'back-tics', as in:

+SV=news]~/usr/www/WebOS/utils/date +%D`]top

After the sub-program executes, this becomes:

+SV=news]09/25/96]top

Sub-program references that invoke the ndate program are used to generate date-range search values, as in:

+SV=news]~/usr/www/WebOS/utils/ndate -3~/usr/www/WebOS/utils/ndate -1`

After the sub-program executes, this becomes:

+SV=news]{09/22/96}{09/24/96}

## **OMF Cookies**

WebOS provides a simple and powerful facility for setting and reading HTTP cookies. Once set, cookies encountered by WebOS will be made available as system variable objects (or basic tag objects) just like any other OMF object.

You can set a cookie by simply adding a Set-Cookie: line as the first line in a template. Multiple Set-Cookie: lines may be specified in succession. A blank line between the last set cookie and the beginning of the actual HTML is required. Format for the Set-Cookie is

Set-Cookie: NAME=VALUE; path=/; expires=DATE

NAME is the name of the cookie (variable name)

VALUE is the Value to set it to.

DATE is a specific format date for the expire date for the cookie (see Netscape's cookie documentation for more information, or use the special WebOS format described below).

WebOS supports a special #cookie\_expire# tag for setting cookie expiration dates properly. For example,

#cookie\_expire# will set the cookie to expire in 120 days by default.

#cookie\_expire.60# will set the cookie to expire in 60 days.

#cookie\_expire.180# will set the cookie to expire in 180 days.

You can use any integer number of days (within reason) after the period (.)

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